

Brief Description of the Drawings]

[Drawing 1] It is drawing of longitudinal section of the motor equipped with the connection structure of the coil coil in the stator concerning the 1st example of this invention.

[Drawing 2] It is a perspective diagram in the state where the stator and the unit for connection of connection structure in drawing 1 were separated.

[Drawing 3] It is the front view which cut a part of unit for connection in the connection structure of drawing 1 .

[Drawing 4] It is drawing of longitudinal section of the unit for connection of drawing 3 .

[Drawing 5] It is the decomposition perspective diagram of the unit for connection of drawing 3 .

[Description of Notations]

13 Stator Main Part

14 Magnetic Pole Child

15 Coil Coil

15a End

15b Other end

16 Unit for Connection (Conductor)

18 1st ** Conductive Member Classified by Phase

19 2nd ** Conductive Member Classified by Phase

20 3rd ** Conductive Member Classified by Phase

21 Conductive Member for Common

22 1st Insulator

23 2nd Insulator

24 3rd Insulator

25 4th Insulator

[Translation done.]

NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the connection structure of the coil coil in the stator included in electric machines, such as a motor or a generator.

[0002]

[Description of the Prior Art] The connection structure of the coil coil in the stator which connects each coil coil in phase through a conductor conventionally is indicated by JP,3-245760,A and JP,4-58751,A, respectively.

[0003] Connection structure indicated by former JP,3-245760,A (it is hereafter called structure 1st conventionally.) It has the ** conductive member classified by phase of the number corresponding to each phase which makes the same configuration mutually, and one conductive member for common. Mutually, each aforementioned ** conductive member classified by phase is changed into an engagement state, and is arranged in the periphery section of this conductive member for common within the same flat surface, and it comes to fix by the main part of a bracket which carried out simultaneous fabrication of this by thermoplastic synthetic resin. And the ends of each aforementioned coil coil are connected for every phase exception by each ** conductive member classified by phase, and the other ends of each aforementioned coil coil are connected by the aforementioned conductive member for common.

[0004] Moreover, connection structure indicated by latter JP,4-58751,A (it is hereafter called structure 2nd conventionally.) In a hoop direction and the direction of an axis, a central angle consists an interval in the body periphery side of the main part of a bracket which consists of thermoplastic synthetic resin, and forms two or more three kinds of slots different, respectively in it. Three kinds of circular conductive member corresponding to the central angle of these slots is prepared, and it fits into the slot which corresponds each of such conductive member, and by each of such conductive member, while connecting the ends of each aforementioned coil coil for every phase exception, the other ends of each aforementioned coil coil are connected.

[0005]

[Problem(s) to be Solved by the Invention] If it is in structure 1st conventionally which was mentioned above, since each ** conductive member classified by phase is changed into an engagement state and is mutually arranged in the periphery section of the conductive member for common within the same flat surface, there is a problem that a whole configuration is enlarged in the direction of a path.

[0006] Moreover, if it is in structure 2nd conventionally, three kinds of conductive member from which a configuration differs must be prepared, and there is a problem that composition becomes complicated.

[0007] this invention was made in view of the above-mentioned situation, and is simple for manufacture and composition, and it aims at offering the connection structure of the coil coil in the stator aiming at the miniaturization of a whole configuration.

[0008]

[Means for Solving the Problem] In the connection structure of the coil coil in the stator which connects

each coil coil with the 1st invention of this invention in phase through a conductor in order to attain this purpose, the aforementioned conductor is characterized by carrying out laminating fixation of the ** conductive member classified by phase of the same configuration in the state of one ***** and electric insulation with each phase of at least two phases.

[0009] In order to attain the same purpose, moreover, the 2nd invention of this invention In the connection structure of the coil coil in the stator which connects each coil coil in phase through a conductor the aforementioned conductor It is characterized by having had further the conductive member for common which connects the coil coil edge of an unusual appearance for the ** conductive member classified by phase of the same configuration in common with one *****, and carrying out laminating fixation of the aforementioned ** conductive member classified by phase, and the conductive member for common in the state of electric insulation with each phase of at least two phases.

[0010]

[Function] According to the composition of a claim 1, since it is the ** conductive member classified by phase of the same configuration, manufacture is easy, and composition is also easy, and since the laminating is carried out, it becomes small.

[0011] Moreover, by carrying out laminating fixation of the ** conductive member classified by phase, and the conductive member for common in the state of electric insulation like a claim 2, manufacture is more easy, composition is also easy, and it can do small.

[0012]

[Example] Hereafter, one example of this invention is explained based on a drawing.

[0013] Drawing 1 is drawing of longitudinal section of the motor equipped with the connection structure of the coil coil in the stator concerning one example of this invention, and among this drawing, one is a motor and makes main components a motor case 2, Rota 3, and the stator 4.

[0014] A motor case 2 comes to equip the both ends of the cylinder-like case main part 5 end plates 6 and 7.

[0015] Rota 3 presses the magnetic yoke 9 fit in the axis of rotation 8, and comes to prepare a magnet 10 in this magnetic yoke 9. And the both ends of the axis of rotation 8 are supported by the center section of of the ends boards 6 and 7 free [rotation] through bearing 11 and 12.

[0016] a stator 4 is shown in drawing 2 -- as -- many -- it has the stator main part 13 which comes to carry out the laminating of the magnetic sheet metal of several sheets, and comes to twist the coil coil 15 around the magnetic pole child [two or more (this example 12 pieces)] 14 who prepared in this stator main part 13 It was fixed to the inner skin of the case main part 5, and this stator 4 has fitted into the interior of this stator 4 free [rotation of the magnetic yoke 9].

[0017] A stator 4 corresponds to the three-phase-circuit structure of U phase, V phase, and W phase, and 12 magnetic pole children 14 correspond to each U, V, and W phase with four-piece **.

[0018] End (for example, cut-water edge : output terminal) 15a and other end (for example, winding end edge : input terminal) 15b of the coil coil 15 which were twisted around each magnetic pole child have extended to the method of the outside of the end along the direction of an axis of the stator main part 13, as shown in drawing 2 .

[0019] In the U aforementioned phases each, V phase, and W phase, end 15a of each coil coil 15 and other end 15b in phase are connected through the unit 16 for connection (conductor) which is the summary of this invention.

[0020] This unit 16 for connection is constituted as shown in drawing 2 - drawing 5 . That is, it consists of one unit main part 17, the 1st corresponding to U phases each, V phase, and W phase, the 2nd, and 3rd ** conductive member 18, 19, and 20 classified by phase (bus bar), one conductive member 21 for common (middle point ring bus bar), and the 1st, the 2nd, the 3rd, and 4th insulators 22, 23, 24, and 25.

[0021] what the unit main part 17 becomes from electric insulation material, such as synthetic resin, -- it is -- a ring -- it really comes to form the periphery side attachment walls 27 and 28 and the middle periphery side attachment wall 29 in the unilateral side of a member 26 inside

[0022] the ring from the inner circumference side attachment wall 27 -- a member 26 is covered, the notch 30 of the letter of the abbreviation for U characters consists regular intervals in a hoop direction,

and are formed at it, and other end 15b of the coil coil 15 inserts in in each of these notches 30, respectively [two or more (this example 12 pieces)]

[0023] The periphery side attachment wall 28 has the open section 31 in part. the 1- which the abbreviation KO character-like notch 32 consists regular intervals in a hoop direction, are formed on this periphery side attachment wall 28 at it, and is later mentioned in each [these] notch 32 -- the salient of the 3rd ** conductive member 18-20 classified by phase is engaged, respectively [two or more (this example eight pieces)]

[0024] It has the subject 33 of the 1st - the letter of the abbreviation for C characters which the 3rd ** conductive member 18-20 classified by phase makes the same configuration mutually, and consists of electric conduction material, such as a copper plate, and regular intervals are consisted in the periphery marginal part of this subject 33 at a hoop direction, and the salient 34 of a two or more (this example four pieces) protrudes on one. The abbreviation KO character-like fixed part 35 is formed in the protrusion edge inferior surface of tongue of these the salients 34 of each at one. and the 1- the 3rd ** conductive member 18-20 classified by phase is in the state which carried out the laminating in the direction of an axis mutually, it fits in the periphery side attachment wall 27 and between 28 among the unit main parts 17, and salient 34 is engaged in the notch 32 of the periphery side attachment wall 28 of the unit main part 17 Moreover, end 15a of the coil coil 15 is fixed to a fixed part 35 by caulking or soldering. Moreover, the terminal strip 36 used as an output terminal is really formed in the end section of a subject 33, a nut 38 fits into the hole 37 of this terminal strip 36, and a screw 39 is screwed in this nut 38. The path cord (illustration ellipsis) of the external instrument which is not illustrated through a screw 39 to these terminal strips 36 is connected.

[0025] Two or more (this example 12 pieces) notches 40 of the letter of the abbreviation for U characters are formed at nothing and its inner skin in the shape of a ring which the conductive member 21 for common becomes from electric conduction material, such as a copper plate. In these notches 40, other end 15b of the coil coil 15 is inserted, respectively, and is fixed by soldering etc. This conductive member 21 for common fits in between the inner circumference side attachment wall 27 of the unit main part 17, and the middle periphery side attachment wall 29, and carries out correspondence agreement of the notch 40 of the conductive member 21 for common in the fitting state with the notch 30 of the inner circumference side attachment wall 27 of the unit main part 17.

[0026] The 1st - the 3rd insulator 22-24 are making the shape of a ring of the diameter of the same to each who consists of electric insulation material, such as synthetic resin. The 1st insulator 22 is infixed between the 1st ** conductive member 18 classified by phase, and the 2nd ** conductive member 19 classified by phase. Moreover, the 2nd insulator 23 is infixed between the 2nd ** conductive member 19 classified by phase, and the 3rd ** conductive member 20 classified by phase. Furthermore, the 3rd insulator 24 is infixed between the 3rd ** conductive member 20 classified by phase, and the end plate 7 of the inside of drawing 1 of a motor case 2, and right-hand side.

[0027] The 4th insulator 25 consists of electric insulation material, such as synthetic resin, and is making making the shape of a ring of the same path as the conductive member 21 for common. And it fits in in the inner circumference side attachment wall 27 of the unit main part 17, and the front face of the conductive member 21 for common is covered.

[0028] Laminating fixation of each ** conductive member 18-20 classified by phase and the conductive member 21 for common is carried out in the state of electric insulation.

[0029] A deer is carried out, and after assembling as are shown in drawing 5 , and the unit 16 for connection in a decomposition state is shown in drawing 3 and drawing 4 , the unilateral of a stator 4 is made to counter, as shown in drawing 2 , and it changes into the state where alignment of end 15a of each coil coil 15 and each fixed part 35 was carried out.

[0030] End 15a of the four coil coil 15 of U phase inserts in each fixed part 35 of the 1st ** conductive member 18 classified by phase, respectively by carrying out move approach of a stator 4 and the unit 16 for connection relatively in this state. Moreover, end 15a of the four coil coil 15 for V phases inserts in each fixed part 35 of the 2nd ** conductive member 19 classified by phase, respectively, for example. Furthermore, end 15a of the four coil coil 15 for W phases inserts in each fixed part 35 of the 3rd **

conductive member 19 classified by phase, respectively, for example.

[0031] On the other hand, other end 15b of the coil coils 15 of each phases of all is inserted into the notch 40 of the conductive member 21 for common respectively through the inside of the notch 30 of the the inner circumference side attachment wall 27 of the unit main part 17, respectively.

[0032] end 15a of each [after changing into such a state] coil coil 15 -- the 1- while fixing to the fixed part 35 of the 3rd ** conductive member 18-20 classified by phase by caulking or soldering, respectively, other end 15b is fixed to the notch 40 of the conductive member 21 for common by soldering etc.

[0033] End 15a of the coil coil 15 of U phase minds the 1st ** conductive member 18 classified by phase by this. End 15a of the coil coil 15 of V phase minds the 2nd ** conductive member 19 classified by phase. End 15a of the coil coil 15 of W phase is connected through the 3rd ** conductive member 20 classified by phase, respectively, and other end 15b of the coil coils 15 of each phases of all is mutually connected through the conductive member 21 for common.

[0034] In addition, what is necessary is just to use it with at least two phases, although using with all phases is desirable as for the ** conductive member classified by phase.

[0035]

[Effect of the Invention] Since each ** conductive member classified by phase which connects the ends of the coil coil of each phase according to the connection structure of the coil coil in the stator of the 1st invention of this invention is the same configuration mutually like the above, the manufacture is easy and composition is also easy manufacture, and since the laminating is moreover carried out, it becomes small.

[0036] Moreover, according to the connection structure of the coil coil in the stator of the 2nd invention of this invention, it is easy, and composition is also simple for the shell and twist monostromatic manufacture which carried out laminating fixation of the ** conductive member classified by phase, and the conductive member for common in the state of electric insulation, and they become small.

[Translation done.]

Brief Description of the Drawings]

[Drawing 1] It is drawing of longitudinal section of the motor equipped with the connection structure of the coil coil in the stator concerning the 1st example of this invention.

[Drawing 2] It is a perspective diagram in the state where the stator and the unit for connection of connection structure in drawing 1 were separated.

[Drawing 3] It is the front view which cut a part of unit for connection in the connection structure of drawing 1 .

[Drawing 4] It is drawing of longitudinal section of the unit for connection of drawing 3 .

[Drawing 5] It is the decomposition perspective diagram of the unit for connection of drawing 3 .

[Description of Notations]

13 Stator Main Part

14 Magnetic Pole Child

15 Coil Coil

15a End

15b Other end

16 Unit for Connection (Conductor)

18 1st ** Conductive Member Classified by Phase

19 2nd ** Conductive Member Classified by Phase

20 3rd ** Conductive Member Classified by Phase

21 Conductive Member for Common

22 1st Insulator

23 2nd Insulator

24 3rd Insulator

25 4th Insulator

[Translation done.]